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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Raimo Leimala

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

07/10/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No. 10/511,290	Applicant(s) LEIMALA, RAIMO	
	Examiner JIE YANG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/24/2009 has been entered.

Status of the Claims

Claims 1-5 and 8-15 have been amended; claims 6-7 are cancelled, and claims 1-5 and 8-15 are pending in application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 8-9, and 14-15 are rejected under 35 U.S.C. 102(b) as anticipated by Cupertino et al (US Re 36,118, thereafter US'118).

Regarding claim 1, US'118 teaches a method for separating a metal selected from the group of magnesium, copper, titanium,

Art Unit: 1793

iron, zinc from an organic complex thereof (Col.1, lines 8-10 of US'118). Though US'118 does not specify the copper in monovalent, because the copper solution reacts with strong chloride solution, the monovalent copper as recited in the instant claim would have been inherently present in the aqueous solution of US'118. MPEP 2112 III&IV. US'118 teaches applying a chelating ring resin to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant (Col.1, lines 11-19 and examples 3-6 of US'118), which reads on the method of removal impurities by contact an aqueous with a chelating ion-exchange resin and removing the metal impurities from said solution using said chelating ion-exchange resin. US'118 teaches that the compound of organic phase are valuable for the selective extraction of antimony and /or bismuth contaminants from the highly acidic solutions used in copper refining (Col.3, lines 19-27 of US'118), which reads on the limitation of the chelating ion-exchange resin binding one or more metal impurities and not binding at least some of said monovalent copper in the instant claim.

Regarding claim 5, US'118 teaches the method including metal complexed with an organic complexing agent capable of being stripped with an aqueous acid, which includes zinc, lead,

Art Unit: 1793

iron, or manganese (Col.4, line 60 to Col.5, line 4 of US'118), which is the same metals as recited in the instant claim.

Regarding claim 8, US'118 teaches the aqueous solution with pH value of 2.0, which reads on the acidic environment as claimed in the instant claim.

Regarding claim 9, US'118 teaches the metal is obtained in weakly acid aqueous solution so that it can be precipitated, for example as the hydroxide or oxide, by neutralization of the small amount of acid with a small amount of alkali (Col.2, lines 1-7 of US'118), which reads on the neutral environment as recited in the instant claim.

Regarding claims 14 and 15, US'118 teaches a method comprises treating the complex with a weakly acid aqueous solution of an alkali metal or alkaline earth metal chloride having a chloride content of at least 4 molar and an acid strength of up to 0.5 molar above the stoichiometric requirement for stripping the metal the metal whereby said complex is decomposed and metal ions are transferred to the aqueous solution (Claim 1 of US'118, 4 molar NaCl is about 232g/l and 0.5 molar copper is about 32g/l—noted by examiner, also refer to the example 4 of US'118). US'118 further teaches higher concentrations favor more complete extraction of impurity metals

Art Unit: 1793

but may reduce the selectivity with which they are extracted (Col.3, Line 38-44 of US'118). The Examiner notes the alkali chloride and copper contents ranges of US'118's solutions are within the claimed chloride and copper contents ranges as recited in the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 and 13 are rejected under 35 U.S.C. 103(a) as being obvious over US'118 in view of Partridge (US 6,165,367, thereafter US'367).

Regarding claims 2-4, US'118 teaches it is known in the arts that the organic complex is produced from an aqueous solution of metal salt with a chelating resin. This point is further evidenced by US'367. US'367 teaches a method for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste steam to sub-ppm level (Col.1, Line 5-9 of US'367). US'367 teaches: "...providing a chelating resin

Art Unit: 1793

containing amino-phosphonic group for capturing the heavy metal ions..."; "...wherein the chelating resin is a styrene divinylbenzene copolymer..." (Claims 1-4 of US'367); US'367 teaches the resin' group can be "represented as: $\text{-NH-CH}_2\text{-PO}_3\text{Na}_2$ " (Col.2, Line 22-37); and US'367 also tests "...a chelating resin with iminodiacetic acid functional group..." (Col.4, Line 38-41). Compared with the instant invention, US'367 overlaps the limitations related to chelating ion-exchange resin recited in the instant claims 2-4. The similar hydrometallurgical process to extract heavy impurities with the similar ion exchange resin renders prima facie obvious. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a suitable ion-exchange resin as demonstrated in US'367 in the process of US'118.

Regarding claim 13, US'367 teaches "methods for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste steam to sub-ppm level." (Col.1, Line 5-9, this metal impurity level is compatible with the level that recited by instant invention—refer to the instant claim 12). This means it would have been obvious to one of ordinary skill in the art to get "cathode copper LME-A grade copper" as demonstrated in US'367 in the process of US'118.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being obvious over US'118 in view of Hyvarinen et al (US 6,007,600, thereafter US'600).

Regarding claims 10 and 11, US'118 teaches the metal is obtained in a weakly acid aqueous solution so that it can be precipitated, for example as the hydroxide or oxide, by neutralization of the small amount of acid with a small amount of alkali, which reads on the limitation eluting to form eluted chelating as recited in the instant claim. US'118 teaches the mother liquor from the precipitation can then be readjusted to weak acidity and re-used for further stripping cycles (Col.2, lines 1-7 of US'118), which reads on the regenerating process as recited in the instant claim. US'118 does not specify the detail process for applying NaCl and alkaline solutions. US'600 teaches: "...a countercurrent leaching of a sulfidic copper material, such as chalcopyritic copper concentrate, in a chloride milieu, so that the obtained product is essentially iron-free alkali chloride-copper chloride solution, where the copper is mainly monovalent..." (Col.2, Line 44-67 and also refer to Fig.1-3). US'600 shows "...the leaching is performed into a circulating NaCl solution..." (Col.3, Line 35-46 and refer to Fig.1-3). US'600 also teaches: "The precipitation is carried out

Art Unit: 1793

by means of sodium hydroxide..." (Col.4, Line 3-19, refer to Fig. 1-3 step 13). US'600 teaches the similar hydrometallurgical processes applying on the same copper-contained solution as recited in the instant invention. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose suitable NaCl and NaOH treatment in operation as demonstrated in US'600 in the process of US'118 because US'600 teaches the copper by hydrometallurgical chloride processes has the chance to make use of a lower degree of oxidation (Col.2, Line 33-39 of US'600).

Regarding claim 12, which depends on claim 11, US'118 in view of US'600 teaches the limitation of claim 11. US'118 further teaches different metals (Fe, Ni, Zn, Cu) reacted with different strip solutions (A= 0.5 molar HCl; B= 0.5 Molar HCl +2.75 molar CaCl₂) in example 4 (Col.7, Line 6-43 of US'118). The concentration levels of Fe, Ni and Zn in the aqueous phase after reacted with strip solution are less than 500 ppm (1ppm = 1 mg/L for H₂O— noted by examiner). This concentration range overlaps the limitation as recited in the instant claim.

Response to Arguments

Applicant's arguments see "applicant arguments/remarks", filed 5/13/2009, with respect to objection to the rejections for claims 1-5 and 8-15 have been fully considered and are not persuasive. Regarding the arguments related to the amended features, the Examiner's position is stated as above.

Applicant's arguments are summarized as follows:

1, Regarding Cupertino et al (US'118), it does not anticipate Applicant's claim 1 because it does not disclose every element recited in the claims arranged as recited in the claims, for example examples 3 and 4 relate to a liquid-liquid extraction and not to use of an ion exchange resin; examples 5 and 6 are directed to the removal of antimony and bismuth using an ion exchange resin, but no copper is disclosed in either example.

2, there is unsupported by any facts for the assertions that monovalent copper would inherently form in the process disclosed by Cupertino et al (US'118) and Cupertino et al (US'118) use a chloride solution as a stripping solution.

3, regarding the rejection of claims 2-4 and 13 over Cupertino et al (US'118) in view of Partridge (US'367), Applicant's claims are directed to removing metal impurities from an aqueous strong chloride solution of monovalent copper using an chelating ion exchange resin, while leaving the monovalent copper in the aqueous chloride solution, Which is not disclosed or suggested in US'118 in view US'367. The process of US'367 may also reduce copper to a sub-ppm level.

4, Regarding rejection of claims 10-12 over US'118 in view of Hyvarinen et al (US'600), the Office has not indicated where US'600 even disclose the use of an ion exchange resin. Even the prior arts were proper to be combined, the result would not be Applicant's invention because there is no disclosure of any monovalent copper in US'118 to be precipitated out.

Examiner's responses are as follows:

Regarding arguments 1, 2, and 4, as pointed out in the rejection for claim 1, US'118 teaches that the compound of organic phase are valuable for the selective extraction of antimony and /or bismuth contaminants from the highly acidic solutions used in copper refining (Col.3, lines 19-27 of US'118). Though US'118 does not specify the copper in monovalent, because the copper solution reacts with strong chloride solution, the monovalent copper as recited in the instant claim would have been

Art Unit: 1793

inherently present in the aqueous solution of US'118. MPEP 2112 III&IV. US'118 clearly teaches a contact copper ion containing solution with 0.5 moles of hydrochloric acid (Example 4 of US'118), which would inherently lead to form monovalent copper as recited in the instant claim 1.

Regarding arguments 3 and 4, the applicant's arguments are against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, US'118 in view of US'367 teaches the limitations of instant claims 2-4 and 13 and US'118 in view of US'600 teaches the limitation of claims 10-12. The motivations for combining these references can refer to office action above. Still regarding argument 3, US'367 specifically applies the same chelating resin with aminophosphonic function group in a strong acidic solution (Col.1, lines 22-38 and Col.2, lines 3-10 of US'367) as recited in the instant claim, a similar element selectivity would be highly expected, therefore, the process of US'367 will not reduce copper to a sub-ppm level.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

Art Unit: 1793

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/
Supervisory Patent Examiner, Art Unit 1793